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# Seafood EXPORT JOURNAL

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# Status of Indian Lobster Fishery and Export



Srikrishnadhas, B.\*

Lobster is one of the marine organisms valued for its export potential. This includes the spiny lobster, sand or slipper lobster and deep sea lobster. The clawed lobsters and freshwater lobsters are not available in Indian waters. Lobsters were not considered as a food item in India before nineteen sixties. They were not fished at all. Even if they were caught in fishing nets, they were thrown away or used as manure for plantation. Later they were sold at low price and it was considered as poor man's food as it was taken by the poor people alone. Only during sixties, lobsters attained export value and henceforth it was attaining good export market and its value went high up. Even now lobsters are not available in local markets as the export demand is more and further the common man cannot afford buying lobster as the cost is very high.

Lobsters form an important fishery in the coastal states of India. The spiny lobsters of the species *Panulirus homarus*, *P. versicolor*, *P. penicillatus*, *P. longipes*, *P. polyphagus*, the deep sea lobster *Puerulus sewelli* and the sand lobster *Thenus orientalis* are the important ones. Each species is dominant in one or other states. Gujarat, Maharashtra and Tamil Nadu are the states which produce the major portion of lobsters. The lobsters form an important marine export product and it is the export market gives the importance to the lobster fishery in India.

There is no separate statistics of lobster landed till 1974. In 1975, 2991 tons of lobsters were landed in India.



***Lobsters were not considered as a food item in India before nineteen sixties. They were not fished at all. Even if they were caught in fishing nets, they were thrown away or used as manure for plantation.***

The fishery had a fall in 1980 with only 679 tons catch. Subsequently it increased gradually and reached the maximum of 4082 tons in 1985. Further also there was fluctuation in the landing (Table 1).

Lobsters are exported in five major forms. They are:

1. Frozen spiny lobster tail.
2. Frozen sand/sliper lobster tail.
3. Frozen cooked whole spiny lobster.
4. Frozen deep sea lobster.
5. Live spiny lobster.

Lobster export statistics is available only from 1966. The export started with the frozen spiny lobster tails. In course of time, based on the demand in the export market, the products changed.

Lobster export started with frozen lobster tails. Frozen whole cooked lobster was exported since 1986. Caned lobster tails were exported for a short period from 1969 to 1993. Though all major forms of products are being exported now, the live lobster trade is recent one and gaining momentum. Separate statistics of the export of live lobsters is available from 1994 only. Live lobster was exported to a tune of 22 tons in 1994 and 128 tons in 1997 earning Rs. 1.55 and 9.3 crores respectively. There was gradual increase in the quantity of lobster exported from 1966 (80.80 tons) to 1985 (1464.47 tons) with a fall in 1980 (Table 1). There was no significant increase subsequently except in 1989.

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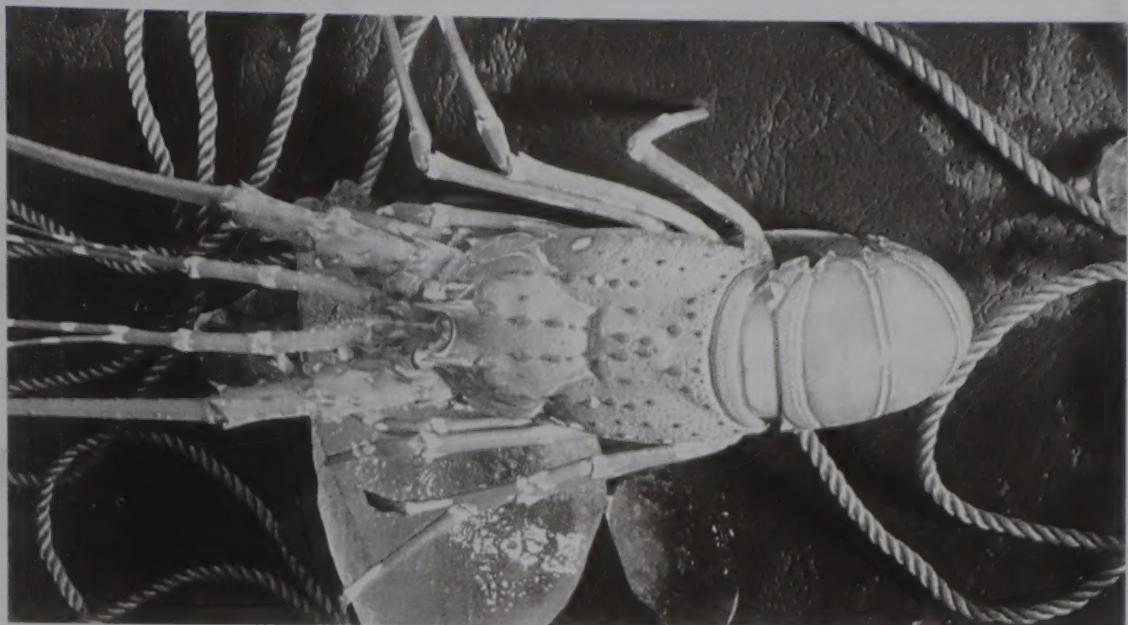
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Since 1990, the lobster exported was between 1330.28 and 1655.49 tons. The maximum quantity of lobster exported was 2228.64 tons in 1989.

The value of the lobsters exported steadily increased from Rs. 0.15 crores in 1966 to Rs. 5.35 crores in 1979. There was a slight decrease in 1980 and the value increased to a tune of Rs. 49.84 crores during 1991 with a fall in 1993 and it increased again to Rs. 58.94 crores in 1997 (Table 1). This increase in value is several times higher than the value got during 1966. This is a very



**Table 1. Lobster landed and exported during 1966-1997**

Year	Lobster Landed	Lobster Exported	
	(Tons)	Quantity (Tons)	Value (Rs. in Crores)
1966	**	80.80	0.15
1967	**	128.29	0.24
1968	**	297.28	0.67
1969	**	529.17	1.12
1970	**	381.54	0.60
1971	**	326.18	1.09
1972	**	368.97	1.28
1973	**	380.09	1.07
1974	**	455.86	1.26
1975	2991	402.42	1.58
1976	2532	512.61	3.18
1977	1127	595.56	3.88
1978	1307	690.51	4.57
1979	1136	751.84	5.35
1980	679	501.33	2.79
1981	1481	635.75	4.70
1982	1764	723.91	5.95
1983	1301	676.49	6.13
1984	3223	968.00	7.01
1985	4082	1,464.47	12.10
1986	3057	1,423.67	15.88
1987	3241	1,472.00	20.32
1988	3708	1,574.00	22.22
1989	3590	2,228.64	33.26
1990	2556	1,655.49	33.16
1991	3262	1,619.08	49.84
1992	3654	1,611.98	47.91
1993	3250	1,472.31	39.57
1994	3007	1,330.28	46.26
1995	2816	1,409.96	46.69
1996	2116	1,353.10	54.47
1997	2808	1,462.80	58.94

\*\* Separate data not available

Source: Statistics of Marine Product Exports, 1966 to 1997.

good trend. The value of the products are steadily increasing. However, the increase in the quantity of lobster product exported is not remarkable.

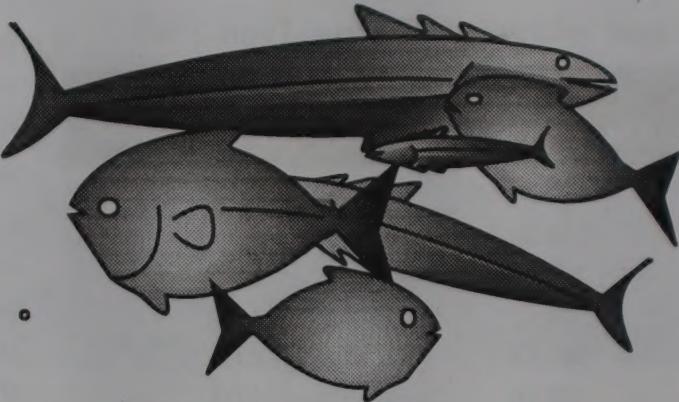
The live lobster export support the toiling fishermen community to a greater extent as live spiny lobsters fetch considerable good price for them, several fold more than the dead lobsters.

The lobster products were exported at the rate of Rs. 18.25/kg in 1966. The rate steadily increased and reached an average of Rs. 335.40 and Rs. 402.90/kg and live lobster was exported at the rate of Rs. 802/kg and Rs. 721/kg respectively in 1996 and 1997. Japan, USA, Hong Kong, China, Italy and Spain are the main importers of Indian lobster products. Hong Kong, Singapore, Srilanka, China, Taiwan and Thailand are the countries to which the live lobsters are exported.

There is indiscriminate fishing of baby lobsters and berried lobsters. Measures must be taken to increase the standing stock of the lobsters in India seas by protecting the under sized and spawning lobsters to achieve the maximum benefit out of lobster export. This is also the time for the entrepreneurs to think of lobster farming as capture fisheries alone cannot support lobster trade to flourish.

\* Fisheries College and Research Institute, Thoothukudi - 8.

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# Seafood for a Healthy Heart

*"If you already had a heart attack or know you're at risk, it's especially wise to eat seafood at least twice a week. All types of fish and shellfish are great."* William Castelli, M.D.

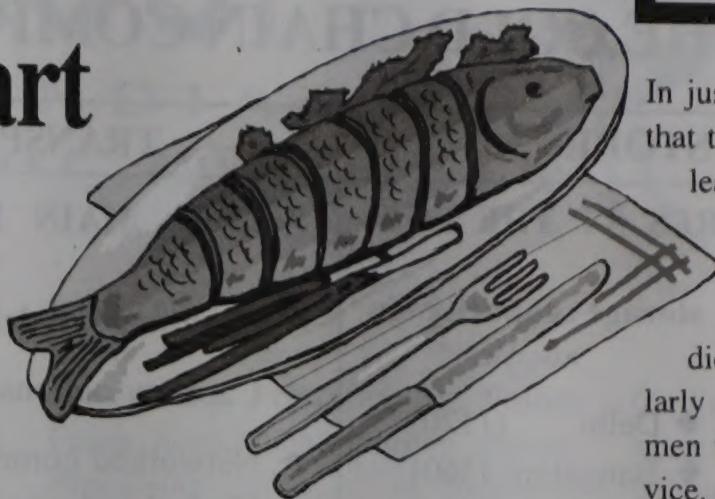
*Director of Framingham*

*Cardiovascular Institute and former Director of the Framingham Heart Study*

Despite recent medical advances in the fight against cardiovascular disease (CVD), the major cause of heart attacks, it remains our number-one killer. About two Americans die each minute (many of them prematurely, often before the age of 65) as a result of CVD. The good news is that seafood-consumption — along with other risk-lowering steps like quitting smoking, lowering blood cholesterol, and getting exercise — can help in the preventive fight against CVD.

The excitement about the health benefits of fish and shellfish began decades ago when scientific investigators noted that certain groups of people — including Eskimos and the Japanese, who rely on seafood as a dietary mainstay — have a low rate of heart attacks. Scores of studies have since been conducted to examine the role of seafood-eating and omega-3 consumption in the prevention of heart disease. Most of this research has shown a beneficial effect.

Following are findings of some of the landmark studies suggesting that seafood-eating protects against CVD,



## EATING SEAFOOD

In just two years' time, it was found that those who were advised to eat at least two weekly portions of oily fish (such as mackerel, salmon, sardines, and trout) were nearly 30 percent less likely to die from any cause — but particularly from heart disease — than were men who did not receive the fish advice. An interesting aside, the average age of men in this study was about 57, suggesting it's never too late to adopt healthful fish-eating habits. Seafood eating may protect against sudden cardiac arrest, a life-threatening condition in which the heart stops pumping because of a disturbance in its beating rhythm. (About 250,000 Americans die of sudden cardiac arrest each year, more than half having no previous history of heart disease.) A study reported in the November 1, 1995 issue of the Journal of the American Medical Association compared seafood intake of a large group of people who were not known to have heart problems with that of several hundred victims of sudden cardiac arrest. Compared with eating no omega-3s, consuming 5.5 grams per month from seafood was associated with a 50 percent reduction in the risk of cardiac arrest. That amount of omega-3s could be more than met by eating a single weekly 3-ounce serving of Atlantic salmon or from two weekly servings of canned, white tuna.

Similar findings were reported in the same journal that in a group of 20,551 men who had no history of heart attack who were followed over the course of 11 years. Those who ate fish and shellfish at least once a week were about half as likely to suffer sudden cardiac death than were men who ate fish less than once a month.

source: [aboutseafood.com](http://aboutseafood.com)



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# SHRIMP 2001

CHENNAI, INDIA

27 - 29 September 2001



**A**fter a long lapse, the Global Shrimp Industry will once again be meeting on 27-29 September 2001 in Chennai, India. The meeting, the Fourth World Conference on Shrimp Industry and Trade, organized by INFOFISH in collaboration with FAO-GLOBEFISH, the Marine Products Export Development Authority of India (MPEDA) and the Seafood Exporters Association of India (SEAI), will be held at Hotel Le Meridien, Chennai. The three-day programme includes a Technical and Investment session and a Buyer-Seller Meet. The event offers opportunities for buyers and sellers to meet and exchange ideas and promote their respective interests.

Seventeenth in the series of International Fishery Commodity Conferences of INFOFISH, SHRIMP 2001 will examine the present global scenario and the future outlook. Over 37 speakers will address the event in the four main sessions and the Technical and Investment session. Session I will focus on the Global Overview with a closer examination of the *Global Shrimp Supply Situation* (Helga Josupeit, FAO) and a discussion on *Sustainable Shrimp Farming: Issues and Non-issues* (George Chamberlain, President, Global Aquaculture Alliance). The session will also be addressed by K Jose Cyriac, IAS, Chairman, Marine Products Export Development Authority who will address issues related to the *Shrimp Industry and Globalization*.

Industry Situation and Outlook will be focused on in Session II and will include discussions on the *Thai Shrimp*

*Industry - Heading towards More Value-Addition* (Paiboon Ponsuwanna, President, Thai Frozen Foods Association), *Shrimp Export-Processing Sector in Indonesia* (Bambang Suboko, Executive Director, GAPPINDO - Indonesian Fisheries Federation), *Latin American Shrimp Industry - Present and Future Outlook* (Santiago Caro Ros, Marketing Expert, INFOFESCA), *Indian Shrimp Industry - Outlook and Prospects* (Elias Sait, President, Seafood Exporters Association of India), *Vietnam Shrimp Industry - on the Fast Track* (Nguyen Huu Dung, Secretary General, Vietnam Association of Seafood Exporters and Producers), *Rapidly Changing African Supply Situation*, *Mozambican Shrimp Industry Situation* (Fernando Ribeiro, Head, Aquaculture Dept, Fisheries Research Institute), *Coldwater Shrimp Supply Situation* (Petur Bjarnason, Chairman, Fisheries Association of Iceland).

The principal markets including Japan, US, Europe and beyond will be examined in Session III dealing with Markets and Marketing. Discussions and presentations in this session will examine the *Japanese Shrimp Market - Outlook and the Future* (Katsuhiko Shimizu, Shrimp Group Manager, Nichirei Corporation), *Japanese Retail Market, An Overview of the US Shrimp Market* (Dave Light, Managing Director, Ocean to Ocean, USA), *Catering/Restaurant Sector in the US Shrimp Market* (Gregory V Brown, Senior Buyer, GMRI Inc, Singapore), *EU Shrimp Market Status - Trade and*

*Quality Issues* (Olivier Hottlet, Managing Director, Hottlet Frozen Foods, Belgium), *Southern European Shrimp Market* (Audun Lem, FAO), *Norwegian Shrimp Industry* (Erik Hempel, Manager, KPMG Consulting, Norway), *Markets and Marketing of Organic Shrimp in Europe* (Markus Stern, Director, Swiss Import Promotion Programme), *Coldwater Shrimp and Asian Markets* (Bent Nelleman, Procurement Manager, F Uhrenholt Seafood, Denmark), *China and other Asian Markets* (Fatima Ferdouse, INFOFISH).

## WHALE SHARK EXPORTS BANNED

The Whale Shark (*Rhinodon typus*) has been included in the Schedule I of the Wildlife Protection Act.

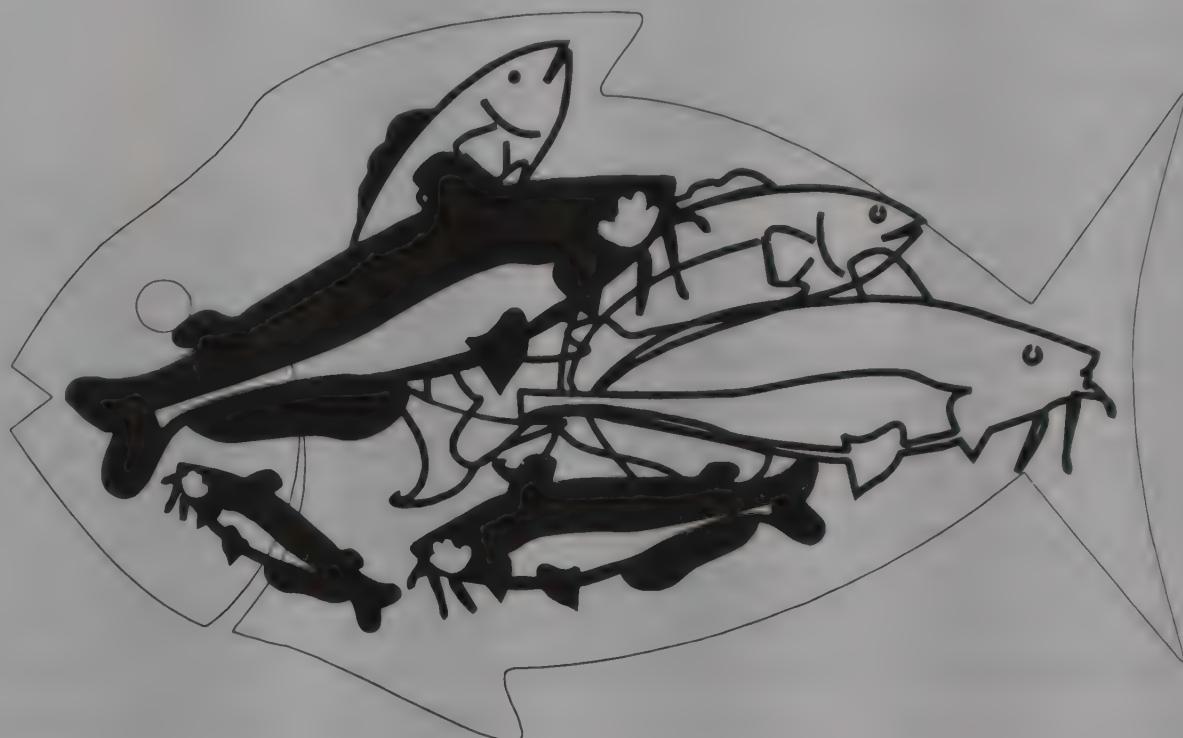
This means Catching and Dealing in Whale Shark would invite Prosecution as per Wildlife Act.

This has been made possible due to the concerted efforts by Environmentalists who have been highlighting the rampant Overfishing and Slaughter of this Gentle Giant of the Sea.

The Government is encouraging Eco-tourism projects that make it possible to watch the Whale Shark in Close Proximity. Fishermen who have been affected by the Ban have been asked to lend out their boats to Whale Shark Watchers.

Whale Shark Meat has been exported in Large Volumes to Taiwan for 8 years. Whale Shark also known as Tofu Shark due to its similarity to Tofu is an expensive meat much in demand on the Island of Taiwan. The Bones are used for Medicinal Purpose. The Liver is used for extracting oil. The Fins too are used in Chinese Cooking.

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# Ornamental Fish Trade Status, Constraints and Prospects

Rajeev Raghavan P.\*

**O**rnamental fishes can be defined on the basis of their attractive coloration, peaceful nature, suitability for keeping in captivity and adaptability for living in confined spaces. The colorful fishes are a fancy for people all over the world and fish keeping as a hobby has developed with world wide interest and is second only to photography in popularity. Also, with the leveling or decline in the global catches of marine and inland food fishes, people are trying to find out other ways of using aquatic biodiversity. One possible alternative is by the sustainable harvest and culture of ornamental fishes. With a retail value estimated in billions the ornamental fish is one of the leading cash crops in the aquaculture industry.

In Asia, The Philippines and Indonesia are the biggest suppliers of marine wild caught fish while the majority of freshwater ornamentals come from Singapore and Hong Kong. In Philippines the export of marine ornamental fishes has been in existence for more than 300 years. In 1998 the country exported live ornamentals worth US\$ 6396.100 million. On the other hand Indonesia exported live ornamental fishes worth US\$ 6 million.

Sri Lanka, a relatively lesser-known nation in the fishery map of the world however has a relatively well-established ornamental fish trade industry. The marine ornamental resources of this island nation is very rich and diverse with an estimated 300 varieties. The export industry of this island nation in regard to marine ornamentals is worth around US\$ 2 million. Although this represents only 8% of the total volume of the marine exports, the value wise percentage exceeds 70%.

About 80% of the freshwater ornamental fishes in the international market come from Singapore and Hong Kong. A major part of these are bred in captivity. Singapore exports relatively few salt-water fishes originating from

total world's supply came from Asia, 30% from South America and the rest from Africa and The Caribbean.

its own resources but depends heavily on the re-export of Indonesian caught fish and invertebrates. Japan is the largest supplier of coldwater ornamental fish such as Gold fish and the famous Koi Carp. Tropical freshwater ornamentals are supplied from the various South American countries like Brazil, Colombia, Peru, Venezuela, Suriname etc. majority of them being wild caught. Other than these, a large number of relatively unknown freshwater ornamental fishes from Africa find their way into the International markets especially from Tanzania.

## The Indian Scenario

Although ornamental fish culture, capture and trade is a well established and a multi million dollar industry in several parts of South East Asia, this is not the case with India. The total export quantity of live ornamental fishes from India was estimated to be around 11,358 kg in 1998 valued at around 1 crore Rupees. The major markets for the Indian ornamental fishes are U.S.A., Germany and France. Precise data is not available regarding the present status of the aquarium industry in the country, but un-official estimates avail-

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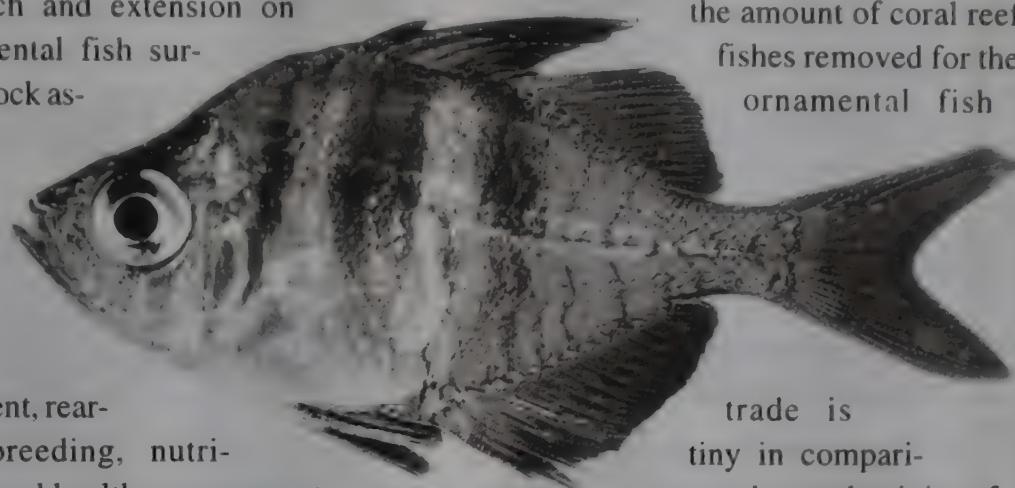
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able indicates that there are around 4 regular ornamental fish farms, 300 full time and 600 part time breeders, around 200 large aquariums and 1500 medium and small aquariums in operation.

Although, India has probably the largest resources of marine ornamental fishes in the world distributed along the coral islands of Lakshadweep and The Andaman and Nicobar Islands, The Gulf of Kutch, Kerala coast, Cape Comorin and The Gulf of Mannar, majority of the ornamental fishes exported from the country are the exotic freshwater fishes bred in captivity and the various species of wild freshwater fishes caught from the different rivers of the country. The marine aquarium industry is virtually an untapped gold mine and if properly developed could earn sizable foreign exchange to the tune of upto US\$ 50 million per month. Ornamental fish culture as a commercial enterprise has yet not taken off in our country. This is because of the fact that ornamental fish trade and industry is relatively lesser known in the rural areas of the country and even in urban areas it is patronized by the very selective affluent class of the society. Lack of governmental and institutional support for this sector is another area, which is hindering the development of this industry.

Strengthening conservation methods in the marine sanctuaries and National Parks of the country like the Wandoor National Park in Andaman and Nicobar islands and The Marine National Park in Gulf of Mannar should be given top priority. Promotion of this sector with proper institutional and financial back up and also the setting up of aquarias and Oceanariums, which will arouse a mass awareness towards ornamental fishes and their management, is useful in development of this sector. Collection and export centres may be promoted near the airports in the cities to help small time breeders in

the suburban area to market their fishes. At present the ornamental fish industry is run by a few private sectors alone resulting in a monopoly of the export trade. Considering the perennial demand for ornamental fishes in the international markets, a series of production units need to be established in every state as well as in the outskirts with all required technical and financial support and also involving the state Fisheries College and Fisheries Departments in the different states of the country. At the national level Fisheries research institute like C.I.F.A., C.I.B.A., C.M.F.R.I., C.I.F.E. etc. can also take up research and extension on ornamental fish survey, stock as-



essment, rear-  
ing, breeding, nutri-  
tional and health management

aspects and also production of hybrids. This would pave way for the development of the sector. Provided, adequate measures are taken to promote this industry, our country can hugely benefit by way of increasing employment opportunities and generating foreign exchange. There lies immense potential for taking up fish breeding and culture not only as a household activity but also for the development of a cottage industry in the country.

### Constraints

As with any other sector, the ornamental fish industry has its own share of problems. Fish loss during capture and transport is relatively high. It is estimated that around 20-30% of the fishes die during transit due to the lack of care on the part of collectors, exporters and importers.

Depletion of wild stocks of ornamental fishes is the biggest challenge facing conservationists. Although majority of the freshwater fishes in the ornamental fish trade are farm raised, large numbers are still removed from the wilds especially in the South American and African countries. The extinction of Discus (*Symphysodon spp*) and the Cardinal Tetra (*Paracheirodon axelrod*) in the middle reaches of the Rio Negro are classical examples. In contrast almost 90% of the marine ornamentals are wild caught raising concerns about the mode of capture and effect on the population. Although

the amount of coral reef fishes removed for the ornamental fish

trade is tiny in compari-  
son to the productivity of  
the habitats and the amount of fish  
removed for consumption, the selec-  
tion of intensive catching techniques  
like the use of poisons such as Sodium  
Cyanide are raising public concerns.

Also, in addition to a diverse range of freshwater and marine fish species the ornamental trade is also involved in the international and intercontinental movement of aquatic and marsh plants, marine and freshwater invertebrates, amphibians and reptiles. The escape or release of such non-native organisms and their subsequent establishment pose an additional threat to the integrity of the aquatic habitat of the receiving country. Of special concern is the importation of livestock and plants for the aquatic trade, with little or no restriction regarding their health status.

Lack of adequate technology transfer in the areas of captive breeding and

# Skillfully tapping the global export potential of marine products.



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management including feeding, larval mass culture and growout at an economically viable level, system design, and health management practices concerned with the artificial propagation of ornamental fishes especially marine ornamentals are the major constraints which are standing in way of developing this multi million dollar industry.

## The Future

Regardless of the high commercial value, significant market and swelling demand, 99% of the marine ornamental fish sold in the markets are wild caught. By contrast only 10% of the freshwater ornamentals are taken from nature. The growing worldwide interest in marine aquarium keeping is causing detrimental effects on the environment. There are signs of natural stock depletion as a result of the unscrupulous collection practices and also risks associ-

future. As far as employment generation is concerned since ornamental fish capture as well as culture can provide additional employment and revenue to the women in the coastal sectors.

Several other steps like establishment of a strict and proper quarantine and health certification code for the international trade, eco-labelling to ensure suitable harvest or growing conditions, development of breeding and domestication technologies for several high value marine species and promoting mass awareness by setting up public aquarias and oceanariums should help revitalize this industry.

The value of the world's ornamental fish industry which includes manufacturing and production of aquarium related goods such as tanks, filters, pumps, heaters, lighting equipment, feed, therapeutics, books, artificial

plants  
and toys

is estimated at

10 times as much as

the retail value of the ornamental fishes. The total value of this trade therefore reaches an incredible sum of over US \$30 billion annually and provided adequate advancements take place the sector could easily outplace aquaculture and capture of food fishes as the highest contributing sector to the global Fishery trade in terms of value. Also the ornamental fish, capture, culture and trade could provide for livelihood of millions of people in industrialized as well as tropical developing countries if practiced in a sustainable manner.

\* Department of Zoology and  
Aquaculture

St. Alberts College, Kochi - 682 018

## EUEMERGENCY MEASURES TO PROTECT HAKE STOCKS ARE EXPECTED

The European Commission (EC) is proposing fishing catches be cut by up to 50% in an effort to safeguard threatened stocks of cod and hake.

EC scientists say overfishing in the North Sea is now so severe that just three out of 10 cod reach maturity.

Brussels says a long-term plan to scale back fishing fleets is the only effective response to the crisis - but admits this will lead to job losses.

Earlier this year, a large swathe of the North Sea was closed to protect cod spawning grounds - the first time such a drastic measure was taken.

This week, the commission is expected to announce similar emergency closures of hake fishing grounds.

Some of the worst-affected areas are in the North Sea and the Irish Sea.

Recovery period Fisheries Commissioner, Franz Fischler, says long-term cuts in catches are needed to allow fish stocks to recover.

Last December, EU ministers reluctantly agreed a 45% reduction in cod and hake quotas for the current year.

Environmental groups warned that was insufficient, and now the commission says the cuts should be extended indefinitely.

As a result, it warns, some fishing businesses will go bust, leading to significant job losses.

EU funds to help fishing communities are available, but officials say countries like Britain have failed to use all the money because under EC rules they must contribute too.

The commission hopes its conservation plan - which must be agreed by ministers - can be introduced by the middle of next year at the latest.

(Source: *bbc news on-line*)



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# Trade and Development

## EUROPEAN COMMISSION ADOPTS NEW GENERALISED SCHEME OF TARIFF PREFERENCES (GSP) REGULATION TO FOSTER SUSTAINABLE DEVELOPMENT

The European Commission on 12 June adopted a proposal for revision to the Generalised Scheme of Tariff Preferences (GSP) for the years 2002 to 2004. Welcoming the Commission's decision, EU Trade Commissioner Pascal Lamy said "this regulation is designed to simplify the GSP regime, restore the level of its benefits and target them more effectively in the interests of developing countries. It is also intended to improve the effectiveness of special incentives to promote core labour and environmental standards. The scheme constitutes a further tangible example of the promotion of sustainable development, a central plank of EU trade policy". The new Regulation complements and fully incorporates the recent 'Everything but Arms' (EBA) initiative in favour of Least Developed Countries.

The Conference adopted a Programme of Action for the decade 2001-2010 to help least developed countries (LDCs). The Programme of Action envisages concrete actions by LDCs and development partners to reduce poverty and to promote sustainable development in the LDCs.

### Simplification and attractiveness

The proposed regulation will simplify the rules and harmonise procedures on the different arrangements available under the GSP. The objective is to make the GSP more user-friendly and attractive. This will in turn motivate more traders to make use of the GSP, and thus increase trading opportunities for beneficiary countries. The

proposal maintains duty-free access for all non-sensitive products, while all other products will be classified in one category of sensitive products, replacing the previous three categories (very sensitive, sensitive and semi-sensitive).

In order to address the erosion of preferences, the key element is a proposed flat rate reduction by 3.5 percentage points.

**The Conference adopted a Programme of Action for the decade 2001-2010 to help least developed countries (LDCs). The Programme of Action envisages concrete actions by LDCs and development partners to reduce poverty and to promote sustainable development in the LDCs.**

### Improved targeting and better adaptability

The proposed regulation is designed to target preferences to benefit those countries, which need them most, rather than countries and sectors which are in a position to face international

competition without preferential treatment. Previously, the eligibility of countries and particular sectors was decided only at the entry into force of a new regulation. It is now foreseen to do this on an annual basis. However, in order to enhance predictability, eligibility of both countries and sectors will only be decided where countries meet the criteria during three consecutive years. The results of this permanent screening will be made public, so as to provide beneficiary countries with some early warning. It is also foreseen to provide for re-inclusion of those countries and sectors, which, during three consecutive years, no longer meet the eligibility criteria.

### Labour and environment standards

The special incentive arrangements contained in the Regulation confirm the EU's preference for an incentive based approach which links additional benefits to respect for core labour and environmental standards, again in the interests of promoting sustainable development. The additional trade preferences would simply double those benefits provided under the general arrangements.

On labour the special incentive arrangements will mean beneficiaries must apply effectively all ILO Conventions containing related to core labour standards in order to be eligible. On the other hand, beneficiary countries committing "serious and systematic" violations of those standards would run the risk of losing their GSP status. Pro-

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longation of Special Drugs Regime.

The special "drugs GSP regime", established to help the Andean and Central American countries in 1996 to replace drugs cultivation with alternative products would be prolonged for a further three years until the end of the current GSP "cycle" in 2004. This would be accompanied by a careful process of monitoring and evaluation in respect of each beneficiary's efforts not only to combat drug production and trafficking, but also to comply with core labour and environmental standards.

#### **Generalised System of Tariff Preference history**

As a result of discussions between industrialised countries in the 1960s, it was recommended to create a "Generalised System of Preferences" under which industrialised countries would grant autonomous and non-reciprocal trade preferences to all developing countries. 142 countries are currently eligible.

Since 1971, most industrialised countries grant autonomous trade preferences to imports from developing countries under the GSP. The EU was the first to implement its own GSP in 1971.

Trade preferences under the GSP are available for imports from all developing countries. For some 90 developing countries and economies in transition, notably in Asia, the GSP provides the only preferential access to the EU's market.

The EU's GSP is implemented over a ten-year cycle. The present cycle began in 1995 and will expire in 2004.

The existing Regulation entered into force on 1 July 1999 and covers the period until the end of 2001. It is the first one to cover all products and all arrangements (such agricultural, industrial, textiles GSP and so on). It is laid down in Council Regulation (EC) No 2820/98 of 21 December 1998.

#### **Everything But Arms**

The new Regulation fully incorporates the recent "Everything But Arms" (EBA) initiative in favour of Least Developed Countries (LDC) which has been applied since 1 March. EBA provides for duty and quota-free ac-

cess for the 49 LDCs.

By way of example, an MFN tariff of 8% would be reduced 5.5% for GSP beneficiaries.

*Press release, Brussels  
12 June 2001*

### **Aquaculture FEAP plans counter-attack in media war**

European fish farmers plan to launch a major initiative in August designed to counter media assaults on the industry. The project is the result of discussions between the Federation of European Aquaculture Producers (FEAP) and major industry players. Funded by the private sector, it will prepare and release aquaculture information using the Internet, multimedia CDs, newsletters and brochures, in a "co-ordinated response" on the sector.

According to a statement, the information will be targeted at the general public, the education sector, government and related institutions, media, and consumer and special groups. It will seek to give correct information on all areas of the sector, and "not avoid sensitive areas where criticism has been raised". The first presentation is expected to be the August AquaNor conference, in Trondheim.

There will be a core 'news' section on legislative, technical and production issues, offering the latest updates on developments and initiatives, and interactive and video/slide sections for recipes, while consumer interests will be answered through nutritional facts and figures. Farmers, suppliers and aquaculture associations will be able to obtain single language CD-ROMS, for national distribution and promotion.

The statement promises "sectoral transparency and proven facts" as opposed to what it calls "conjecture rather than substantiated fact... correct and proactive information that is inter-

esting whilst promoting and supporting the whole of the sector - producers, suppliers and researchers."

Initially production information will focus on European activities, giving data on species being produced in marine and freshwater sectors, profiles on biology and lifecycles, and eventually national profiles, with information on farms that encourage visits, tourism and sport fishing opportunities, while "producers and players in the sector will be encouraged to present themselves through 'Aqua-media'."

In an attempt to refute environmental criticisms which have dogged the sector, the project will "provide factual data demonstrating aquaculture can exist in harmony with nature, including cited references to its interactions with the environment. The development of objective arguments and a reliable information stream, paying attention to sectoral transparency and proven facts, will be an important part of the initiative." Reports on specific subjects will be sourced, and articles commissioned on selected topics.

FEAP President Alessandro Perolo described it as the "most important project FEAP has ever been involved in and we are delighted to have obtained the support of so many parts of the aquaculture sector. It is our intention that Aqua-media will be the authoritative information resource for use by consumers and others who are interested in how we operate."

*(Source: Intrafish)*

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# Food Irradiation and its Present Status in India

India

M.Ganapathi Naik  
and T.J.Ramesha\*

**C**onservation and preservation of food is a prerequisite for food security ensuring a good economic stability and self-reliance to the nation. The hot and humid climatic conditions of a country like India favours good growth of pathogenic microorganisms in foods like, meat poultry and sea-foods resulting illnesses associated with their consumption. However, unlike other food items sea-foods are highly perishable in nature that commands a reliable and effective method of processing and preservation. It has been said that use of ionizing radiation in the preservation of food is the first new and novel processing method developed in this century. Its development came at a time when there was growing concern about the biological burden caused by the increased use of chemicals in food industry and from the use of insecticides in the fields.

## Radiation processing of food

Radiation processing of food is carried out inside an irradiation chamber shielded by 1.5-1.8m thick concrete walls. Food either pre-packed or in bulk placed in suitable containers is sent into the irradiation chamber with the help of an automatic conveyor. The conveyor goes through a concrete wall labyrinth, which prevents radiation. When the facility is not in use the radiation source is stored under 6m deep water. The water shield does not allow radiation to escape into the irradiation chamber, thus permitting free access to personnel to carry out plant maintenance. For treating food, the source is brought to the irradiation position above the water level after activation of all safety devices. The goods is aluminium carriers or tote

boxes are mechanically positioned around the source rack and are turned round their own axis, so that contents are irradiated on both the sides. The absorbed dose is determined by the residence time of the carrier or tote box in irradiation position. Absorbed dose is checked by placing dosimeters at various positions in a tote box or carrier.

## Significance of food irradiation

Irradiation processing of food involves the controlled application of energy from ionization radiation such as gamma rays electrons and x-rays for food preservation. Irradiation is a cold process and can be used for the pas-

teurization and sterilization of foods without changing its freshness and texture of food. However it has the following advantages.

- \* Disinfection of insect pests in stod products.
- \* Inhibition of sprouting of tubers and bulbs and delay in ripening of fruits.
- \* Desfruction of microbes responsible for spoilage.
- \* Elimination of pathogens and parasites of public health importance.

**On the basis of radiatin dose, it can be classified into**

### *I. Low dose applications :*

1. Sprout inhibition in bulbs and tubers – 0.03-0.15Kgy.
2. Delay of fruit ripening – 0.25-0.75Kgy.
3. Insect disinfestation including, quarantine treatment and elimination of food borne parasites- 0.25-1Kgy.

### **II. Medium dose applications :**

1. Reduction of spoilage microbes to improve shelf-life of meat, poultry and seafoods under refrigeration – 1.5-3Kgy.
2. Eliminatin of pathogenic microbes in fass and frozen meat, poultry and seafoods – 3-7Kgy.
3. Reducing number of microorganisms in species to improve hygienic quality – 10KGy.

### **III. High dose applications :**

1. Sterilization of packaged meat, poultry and their products which are shelf-stable without refrigeration – 25-70KGy.
2. Sterilization of hospital diets – 25-70KGy.

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## Nutritional status and Safety of irradiated foods :

Processing and preservation of food through irradiation forms the best method than the other as it possess high nutritional value. Studies have shown that irradiation has very little effect on the main nutrients such proteins, carbohydrates, fats and minerals. Nutrition status of irradiated food depends on a number of factors such as the dose of radiation, type of food and packaging conditions. Very little change in vitamin content is observed in food that is exposed to doses up to 1KGy. This is supported by the observations of The Joint Expert Committee World Health Organization (WHO) and International Atomic Energy Agency (IAEA) in 1980.

Studies conducted to ensure toxicological, nutritional and microbiological safety of irradiated food suggested that food is safe for human consumption upto a maximum dose of 10KGy (FAO, 1980). Independent technical and scientific committees constituted by several countries including Canada, Denmark, France, India, Sweden, the U.K, European Economic Community (EEC) and the US FDA have declared that radiation processed food is safe for human consumption. At present, about 40 countries worldwide including India have approved the use of irradiation for over 100 food items and about 30 of these are applying the technology on a limited commercial scale. South Africa alone has cleared more than 40 food items.

## Public health consideration

Although one of the claims put forward for the use of ionizing radiation is that no chemical residues result from its use in most countries the regulation of use of those method has been under the laws pertaining to food additives. Irradiation like most other methods and processing, leads to some destruction

of vitamins, but on balance, these losses are no greater than those occurring during heat processing. The use of electron of very high energies implies a certain hazard, which has been the subject of theoretical and experimental study. Below 10 m.e.v., there is no problem, but since the penetration of such rays is limited, energies are technically desirable. Studies with electrons of 25 m.e.v. energy indicated that the amount of induced radioactivity (in carbon and chlorine) is below permissible levels and would present no hazard to a consumer if the food had been stored for a minimum period of a week.

## Laws and regulations for irradiated foods

Laws and regulations enacted by Atomic Energy Regulatory Board govern operations of irradiators used to process non-food products, such as medical supplies. Three such irradiators are operating in India and about 160

around the world. The plants prior to construction, must be approved by the Government for regular inspection, safety audits and other reviews to ensure for their safely and proper operation. Similar controls would be applicable for radiation processing facilities. Codex Alimentarius commission, of the United Nations Food and Agriculture Organization (FAO) and the World Health Organization (WHO) at the international level have laid down, their standards for good manufacturing practices (GMP) and good irradiation practices (GIP) for a number of foods, covering all aspects of treatment, handling, storage and distribution of food. The guidelines of food preservation techniques stresses the need for installation and monitoring of effective quality control systems at critical control points at the irradiation facility.

## Food irradiation in India

Research conducted at Food Tech-

**Table –1 : Approved food items by The Ministry of Health and Family Welfare (1995)**

Name of food	Purpose	Dose (KGy)	
		Min	Max
Onion	Sprout inhibition	0.03	0.09
Potato		0.06	0.15
Ginger		0.03	0.15
Garlic		0.03	0.15
Shallots (small onion)		0.03	0.15
Mango	Disinfection (Quarantine)	0.25	0.75
Rice		0.25	1.0
Semolina (sooji, rawa)		0.25	1.0
Wheat atta and maida (refined wheat flour)		0.25	1.0
Raisins, flags and dried dates	Disinfection	0.25	0.75
Meat and meat products including chicken		2.5	4.0
Spices	Microbial decontamination	6.0	14.0

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**Table-2 : Approved additional food items recommended by the Central Committee For Food Standards.**

Name of food	Purpose	Dose (KGy)	
		Min	Max
Pulses	Disinfestaion	0.25	1.0
Dried sea-foods		0.25	1.0
Fresh sea-foods	Shelf-life enhancement	1.0	3.0
Frozen sea-foods	Pathogen control	4.0	6.0

nology Division of Bhabha Atomic Research Centre (BARC) has demonstrated that radiation processing of foods can contribute to nation's food security through the reduction of post-harvest losses caused by insect infestation, microbial spoilage and physiological changes. The amendment of prevention of Food Adulteration Rules (1954) through a Gazette notification dated August 9, 1994 by Ministry of Health and Family Welfare, permitted the irradiation of onion, potato and spices for internal marketing and consumption. In 1998, a number of other food items were permitted for radiation processing (Table -1). Approval for additional items including fish and shrimp is expected soon (Table -2).

The Government of India has constituted a National Monitoring Agency (NMA) under the Chairmanship of Secretary, Ministry of Health and Family Welfare to make sure of the aspects of commercial food irradiation in the country.

Application for clearance of irradiation of specific food items were initially examined by Expert Group on Food Irradiation constituted by NMA. The recommendations of this Expert Group are further considered by NMA and subsequently by the Central Committee for Food Standards (CCFS) for the approval. The food items approved for radiation processing are notified in the Gazette of India as an amendment to the Prevention of Food Adulteration Act, 1954 and Rules 1955.

### Regulations on food irradiation

The construction and operation of a good irradiation facility for commercial purposes is governed by the Prevention of Food Adulteration Act, 1954 and Rules, 1955 and the Atomic Energy (Control of Irradiation of Food) Rules, 1996, under the Atomic Energy Act, 1962.

Atomic Energy (Control of Irradiation of Food) Rules, published in the Gazette of India, June, 1996 provides the Government Statutory Rules for the authorization and licensing of irradiation facilities for the treatment of foods and procedures for obtaining certificate and approval from the competent authority (Atomic Energy Regulatory Board) and licence for a food irradiation facility from the licensing authority (Department of Atomic Energy, Central Government). It also stipulates qualifications of personnel such as operators of irradiation facility, radiological safety officer and quality control officer.

### Feasibility of radiation processing

Treatment of fish and fishery products with low levels of radiation helps in substantial saving, its better distribution in interior parts of the country and serving the foreign buyer with high quality finished products. Although detailed feasibility study is yet to be carried out for radiation processing of fishery products in India, the capacity and utilization pattern

should account for the total quantity to be processed per year. Immediate prospects appear bright for radiation and disinfection of dry fishery items. Production of 5,000-10,000 tonnes per annum could be considered as a reasonable amount planning a radiation processing plant. The dehydrated products can be easily transported to radiation processing centres and treated at the stipulated doses. Data obtained from different Southeast Asian countries have indicated the value of dried fishery products at approximately US \$ 2.0 per kg. Radiation processing cost of the product has been estimated around 11-14 or 16-20 US \$ per tonne depending upon the throughput of 5,000 or 10,000 tonnes respectively. Since fish and frozen fishery products are currently fetching comparatively high prices in the international markets, it is assumed that these items can absorb the cost of radiation processing to give better quality products in markets world around.

Although an FDA decision permitting the general use of low dose irradiation is expected soon, the availability of the necessary facilities near the site where fish are landed and/or processed may present a problem. Commercial samples would have to be labeled to prevent fish from being re-irradiated. Whether consumer packages have to be labeled "irradiated" are not is an important question that awaits a final FDA decision. Numerous comments have already been received from the public mostly negative towards irradiation are at least favouring labeling. Presently irradiation is not accepted because of the negative public response but definitely in future it draws a good attention as it is a cheaper and effective method of preservation of food.

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# SEAFOOD TERMINOLOGY



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## From A to Z

### A



**Aberdeen Cut:** A rhombus-shaped cut from a block of frozen fish; sides may be squared off or cut with a tapered edge. Usually breaded/battered. Also called diamond cut, French cut.

**Ahi:** Hawaiian name for yellowfin tuna.

**American Cut:** Fish portions or fillets with tapering or beveled edges, rather than square-cut sides. Also called Dover cut.

**Anadromous:** Fish that swim upstream into freshwater rivers from the sea for breeding, such as shad and salmon.

**Aquaculture:** The regulation and cultivation of various types of fish for human consumption. Fish farming utilizes scientific methods to insure maximum production and high quality, while keeping costs competitive with wild product. In the U.S., most of the commercial freshwater trout, shrimp, salmon and catfish we consume are farmed

### B



**Battered:** Product covered in liquid mixture, usually egg and flour. This is usually partly cooked (pre-cooked) to set the batter in place before freezing.

**Belly Burn:** A condition where the rib bones protrude into the belly cavity. It usually indicates soft flesh, and shows that the fish was not totally fresh when

processed or not properly eviscerated.

**Bites/Bits:** Small pieces of fish breaded or coated with batter, weighing less than 1 oz. each. Shape may be round, square, or irregular. May be cut from regular blocks or blocks of minced fish. Also called cubes, nuggets, petites, tidbits. Generally sold by count, 25-35 per lb.

**Bleeding:** Method in which fishermen remove blood from fish by cutting an artery. Large meaty fish like tuna are routinely bled before further processing. Skates and sharks are also bled to remove uric acid.

**Block:** Frozen fish blocks are rectangular or other uniformly shaped masses of cohering fish fillets or a mixture of fillets and minced fish flesh, or entirely minced fish flesh. These blocks usually range in weight from 13 to 16 lbs. and are intended for further processing into fish sticks and portions. Larger blocks may be available that contain whole dressed fish for subsequent thawing, processing or resale.

**Boned/Boneless:** Term used by packer to indicate that product has been processed to remove backbone and rib bones.: Term used by packer to indicate that product has been processed to remove backbone and rib bones.

**Brine Freezing:** Freezing seafood by soaking in liquid brine. King crab or snow crab is often brine-frozen.

**Breaded:** Product covered in liquid dip, bread crumbs and seasonings. The

breading forms a jacket within which the product cooks gently. Breading helps to retain moisture in the product during cooking, and also adds contrasting texture and flavor to the product.

**Bushel:** Unit of measure equal to 8 gallons or 32-quart capacity. Often used to measure quantity of clams, oysters or crabs.

**Butterfly Fillet:** Fish is cut along both sides with the two pieces remaining joined by the skin of the back. Technically, two pieces held together with the belly skin is called a kited fillet.

**Butterfly Shrimp:** Peeled and deveined shrimp with the shell left on the last (tail) segment. Shrimp in this form is often breaded.

### C



**C&F:** Shipping term for cost and freight. When quoted, a C&F price means price delivered.

**Caviar:** Sturgeon eggs which have been preserved in salt. Caviar comes in many grades and types and must be transported and held fresh at temperatures between 25F and 30F. (See Roe)

**Cello Wraps:** Fillets wrapped together in cellophane or polyethylene film. Each wrap is usually labeled with the type of fish, the packer and the brand. Six polywraps per 5-lb. box is standard.

**Chunks:** Cross-sections of large dressed fish, having a cross-section of



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backbone as the only bone. They are similar to a beef or pork roast and are ready for cooking.

**Croquettes:** Patties containing a mixture of breading or breadcrumbs or other binder; usually at least 35% seafood, such as combination of fish and crabmeat. May have all one kind of seafood, such as shrimp or crabmeat, or a combination. Product forms include breaded; pre-cooked or browned; I.Q.F., 2 oz. each, dry-pack

**Ciguatera:** A neurotoxin found in certain types of reef fish. The toxin accumulates in the flesh as a result of eating some forms of algae, or preying on fish that eat the algae. Crustaceans: Shrimp, crabs, crawfish and lobsters. (Also see Shellfish).

**Cryogenic:** Extremely cold freezing process, using liquid nitrogen or carbon dioxide, often used to freeze high-value items like shrimp or soft-shell crabs.

**Curing:** Using salt or sugar to draw moisture from the flesh of fish or other meats to make it unattractive to the growth of spoilage bacteria. Curing was widely used as a preservation method before the advent of modern refrigeration techniques. Today, curing is used to give a pleasing flavor to fish and refrigeration is recommended to preserve this product from spoilage.

**Custom Cut:** Irregularly shaped triangle cut from a block of frozen fish. Usually breaded/battered: Irregularly shaped triangle cut from a block of frozen fish. Usually breaded/battered.

**D**  
**Dip:** A number of similar chemicals are used in processing seafoods to help retain moisture, and sometimes to improve the appearance by whitening. The use of dips is long established and so far as is known, harmless. It is common in other parts of the food industry.

**Dragger:** A term interchangeable with

a fishing trawler boat. Draggers tow a large net.

**Drawn Fish:** Entrails, gills and scales removed. Since entrails cause rapid spoilage, drawn fish have a longer storage life.

**Dressed Fish:** Completely cleaned but with head on (head removed is usually called pan-dressed). Both forms are ready for stuffing and are generally cooked in one piece.

## E



**Ex-vessel Price:** Price received by fishermen for fish, shellfish and other aquatic plants and animals landed at the dock.

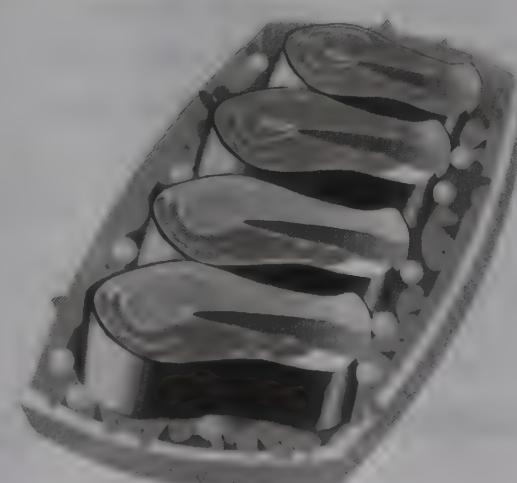
## F



**Filet:** French spelling for fillet (see Fillet)

**Fillet:** A slice of fish flesh of irregular size and shape, which is removed from the carcass by a cut, made parallel to the backbone, usually 2 to 12 oz. Some fillets, especially of fresh fish and those used to make up the larger frozen blocks, may be larger than 12 oz. However, for most institutional foodservice and home uses, frozen fish fillets over 12 oz. are not generally available. Special cut fillets are taken from solid large blocks; these include a "natural" cut fillet, wedge, rhombus or tail shape. Fillets may be skinless or have skin on; pinbones may or may not be removed.

**Fingers:** Irregular-shaped pieces of



fish, similar to a long, thin fillet, breaded or battered, raw or pre-cooked. Weight per piece varies, usually available portioned (1 to 3 oz.), or in bulk.

**Finnan Haddie:** A medium-sized haddock split down the back with backbone left on, then brined and hot smoked.

**Fish Sticks:** Rectangles of fish cut from a frozen block, usually 1 by 3 inches, weighing 1 to 2 oz. each, breaded/battered. Fish stick packs may bear grading and inspection marks. Fish sticks may also be cut or extruded from a minced fish block. Labels must, and menus should, show whether fish sticks are "minced fish" or "fillet fish" sticks.

**Fletch:** Large boneless fillet of halibut, swordfish or tuna.

**FOB:** Means free on board and a location usually follow this term. Charges beyond the termination point are the buyer's responsibility.

**Formed Fillets:** Portions cut from blocks in such a way that they appear to be natural fillets, although all are exactly the same size and shape.

**Freezer Burn:** Dehydration caused by the evaporation loss of moisture from product. It is recognized by a whitish, cottony appearance of the flesh, especially at the cut edges or thinner places.

## G



**Glaze:** Protective coating of ice on frozen product to prevent dehydration. There are laws against excessive glazing

**Green Sheet:** The name by which most people refer to the Market News Reports issued by the National Marine Fisheries Service from New York.

**Groundfish:** Broadly, fish that are caught on or near the sea floor. The term includes a wide variety of bottom fishes, rockfishes, and flatfishes. However, the National Marine Fisheries Service sometimes uses the term in a



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narrower sense. The term usually applies to cod, cusk, haddock, hake, pollock and Atlantic ocean perch.

**H****Headed and Gutted (H&G):**

Have head and viscera removed before sale.

**Histamines:** Chemicals produced by decomposition of flesh in scombroid species (tuna, mahi mahi, mackerel) from poor handling. Not usually fatal in individuals with normal immune systems.

**I****I.P.W:** Individual polywrapped.

**I.Q.F.:** Individually quick frozen. Fillets are packed IQF in 2 or 4 oz. gradations; 2-4, 4-6, 8-10, etc. Typical species packed in this manner are whitefish, sole, cod, and Pacific rockfish. Shrimp are also sold IQF, breaded or unbreaded in various forms.

**J**

**J-Cut:** Trimming a fillet removing both the nape and pinbones, usually the most expensive cut.

**K**

**Kg; Kilo; Kilogram:** A metric weight equivalent to 2.2046 lbs. In the U.S. it is usually calculated as 2.2 lbs. Imported product is often sold by the kilogram.

**Kipper:** To cure (herring, salmon, etc.) by cleaning, salting and drying or smoking.

**L**

**Landings:** Quantities of fish, shellfish, and other aquatic plants and animals brought

ashore and sold. Landings of fish may be in terms of round (live) weight or dressed weight. Landings of crustaceans are usually on a live weight basis except for shrimp, which may be on a heads-on or heads-off basis. Mollusks are generally landed with the shell on, but in some cases only the meats are landed (as with scallops). Data for all mollusks are published on meat weight basis.

**Layer Pack:** Product, usually fillets, put into a carton in layers with a sheet of polyethylene between each layer of product.

**Loin:** The boneless portion of edible flesh cut lengthwise from either side of the backbone of a large, round-bodied fish.

**Lox:** Smoked salmon.

**M**

**Mellanosis:** Blackening of the shell in crustacean, especially shrimp and some crabs. Mellanosis will always appear in time, but it happens much more quickly if product has not been properly handled before freezing.

**Mollusks:** See Shellfish.

**Molting:** The shedding of the exoskeleton of crustaceans in order to grow.

**N**

**Napecut Fillets:** A wide angular cut from the gill cover to the vent eliminating the rib cage, or by slicing it from the fillet.

**Net Weight:** Net weight is the weight of the product without packing material or glaze. The problem is to determine the net weight without glaze, since most seafood will drip their own moisture for days.

**O**

**Ocean Run:** Industry term for a pack of random weight and size products.

**P**

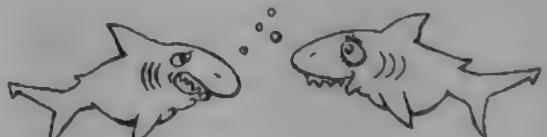
**Parasites:** Worms or larvae that may occur occasionally in fish. All processors carefully inspect fish for parasites and cut out any discovered prior to shipment. Dead parasites are harmless but unappetizing.

**Pasteurizing:** Process of heating product sufficiently to kill most bacteria, but not enough to cook the meat.

**Pelagic:** Migratory species of fish that live near the surface such as tuna.

**Per Capita Consumption:** Consumption of edible fishery products in the U.S., divided by the total population. In calculating annual per capita consumption, the National Marine Fisheries Service estimates the resident population of the U.S. in July of each year.

**Precooked:** Portion, which has been cooked or partially cooked so as to require only heating or minimal cooking prior to service.



**Pinbones:** Fine bones found along the middle of fillets.

**Portion:** Usually a square or rectangle, cut from a block of frozen fish. Weights vary from 1-1/2 oz. to about 6 oz. May be plain or breaded, raw or pre-cooked.

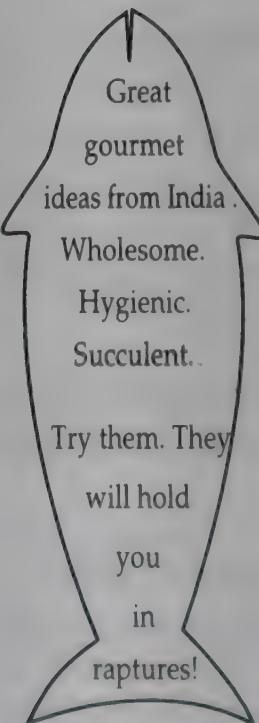
Fish portion packs may bear grading and inspection marks. Raw portions are

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at least 3/8 inch thick, and contain at least 75% fish. The fish from which the block is made must be fillets from only one species, skin on or skinless.

Minced fish portion is a term used for portions manufactured from mechanically separated fish flesh. Labels must, and menus should, indicate whether fish portions are "minced fish" or "fillet fish" portions.

**R**

**Rancidity:** The oxidation of the natural oil in the fish, making the fish unpalatable.

**Red Tide:** A reddish-colored carpet of algae that appears below the surface of the sea and is eaten by clams, mussels and oysters. The algae secrete a substance that can be toxic to humans. Fishing grounds are closed when red tide occurs, preventing the harvest of any contaminated shellfish.

**Roe:** Most fish species grow their eggs in a sac in the abdomen, and the roe of some species is considered a delicacy in various countries. Sturgeon roe, or caviar, is the best-known and most expensive in the U.S., but cod, herring, mullet, pollock, salmon and shad all produce roe prized by various regional and ethnic groups.

**Roundfish:** Refers to physical shape of the body of the fish, and is more a convenient way to group all fish other than those in the flatfish family than a scientific classification. (See Flatfish).

**S**

**Salmonella:** A microorganism causing food poisoning in humans, salmonella is very common and is found on meat, poultry and rarely, seafood. Normal cooking destroys salmonella.

**Scampi:** Another name for large shrimp, usually about 1 oz. or larger. Outside the U.S., the term is also applied to lobster. Also a method of preparation, usually with shrimp, that

includes butter and garlic.

**Scrod:** Also spelled schrod. Small Atlantic cod, haddock or pollock whole, 2.5 pound or less. Available whole dressed or as fillets.

**Sections:** The three walking legs and one claw on one side of king, snow or Dungeness crab, all attached at the shoulder.

**Shatterpack:** A box of frozen fish fillets separated by interleaved polyethylene sheets. Fillets can be separated by dropping the box, "shattering" the pack.

**Shellfish:** Two major groups of seafood are called shellfish. Mollusks include clams, oysters, mussels, conch, snails and scallops. Crustaceans include shrimp, crabs, lobster and crawfish. Squid and octopus are generally considered shellfish as well.

**Skinned:** Some species of fish are skinned rather than dressed, such as catfish and eels.

**Steak:** Slices of dressed fish smaller than chunks. They yield an edible portion of about 86% to 92%. They are ready for cooking. Salmon, halibut, swordfish and other large fish are commonly processed and sold as steaks.

**Stuffed Fish:** Whole dressed fish which is stuffed with dressing/stuffing before cooking. Some species, such as flounder, are available in stuffed frozen form for convenience.

**Surimi:** The Japanese term for fish paste. Surimi is restructured fish flesh; usually pollock or some other economically priced finfish, bound together, and flavored and/or colored. Surimi products are usually colored and shaped to resemble crab, lobster, scallops, shrimp or other more expensive seafood species, and may contain varying amounts of these shellfish for flavoring. The FDA recently approved disjunctive ("and/or") labeling for surimi, so the actual proportions of each species may be difficult to determine.

**T**

**Tails:** Fish portion, which resembles the tail of a fish, boneless, usually breaded or batter-dipped, raw or precooked. Weights vary from 3-1/2 to 6 oz. sometimes the entire tail, bone-in, is breaded and frozen for sale as a "tail". The term is also applied to shrimp and spiny lobster with reference to their meaty tail sections.

**Tempura Batter:** A light Japanese-style batter which is becoming increasingly popular.

**Ton:** In international seafood sales, usually refers to a metric ton (2205 lbs.).  
**Tripolyphosphate (also, Sodium Tripoly, STP):** A sodium-based additive used to control moisture loss. Often applied at sea to fresh-shucked scallops. Seafood with tripoly added is referred to as "wet," "dipped," or "treated."

**U, V, W**

**Viscera:** Intestines of a fish or shellfish.

**Whole or Round Fish:** Fish sold just as they come from the water. They must be dressed before cooking.

**X, Y, Z**

**Yield:** The percentage of a fish that is edible or saleable.

source: [aboutseafood.com](http://aboutseafood.com)

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# Joint Participation in International Fairs

The Marine Products Export Development Authority has been organising joint participation in selected international seafood fairs. The joint participation in international fairs has been widely welcomed by the Trade as it enabled the exporters to display their products, meet their importers and discuss business deals for mutual benefit. In order to motivate the Trade to participate along with MPEDA in such fairs, the Authority has also introduced a package of assistance by which 6 sq.mts. ground space will be provided to manufacturer-exporters at 50% of the cost and 30% of the to and fro airfare by normal economy class by the shortest route for a representative of the participant exporter is also reimbursed to them. Display of seafood samples manufactured by the participant exporters is an essential part of participation in an international fair. However, it has been observed over the years that the participant exporters under the joint participation programme are reluctant to display their products mainly because of the heavy rental charges to be paid for deep freezers. Because of non-display of seafood samples by the exporters, the joint participation is not getting the desired results in promoting exports. Keeping this in view and also taking into consideration the importance of sample displays at the Shows, MPEDA has recently approved to extend financial assistance at 50% of the rental charges subject to a maximum of US\$600 towards freezer hire charges for participants under the joint participation scheme. This assistance is in addition to floor rental and airfare subsidy now being provided to the joint participants. The freezer rental

SI No.	Name of the Fair	Date & Venue	50% space cost for 6 sq.mts. ground space
1.	International West Coast Seafood Show	7-9 October 2001 Los Angeles	Rs. 26,000/-
2.	Anuga Fair	13-17 October 2001 Germany	Rs. 23,000/-
3.	China Fisheries & Seafood Expo	30.10 to 1.11.2001 Beijing, China	Rs. 59,000/-
4.	Singapore Seafood Exhibition	27-29 Nov. 2001 Singapore	Rs. 40,000/-
5.	Alimentaria	4-8 March 2002 Barcelona	Rs. 22,000/-
6.	Boston Seafood Show	12-14 March 2002 Boston, USA	Rs. 40,000/-
7.	European Seafood Exposition	23-25 April 2002 Brussels, Belgium	Rs. 55,000/-

assistance will be paid to the participants in Indian Rupees after completion of the fair on production of cash receipt for the rental paid and also other documentary evidences like invoice/bill etc.

The Ministry has approved the above international fairs for participation of MPEDA during 2001-2002.

Ministry also desires that the Trade should be associated and also participate in all the fairs.

The 50% fee for 6 sq. mts. space has been indicated against each of the fair. MPEDA has already started booking ground space in fairs like China Fisheries & Seafood Expo, Boston Seafood Show and European Seafood Exposition 2002 in order to get a prime location for organising the participation. Without knowing the Trade's requirements, it is difficult to assess the space requirement in each of the fairs. A vantage position for MPEDA pavilion is an essential

factor to make the participation more effective and attractive. The participating exporters may be asked to send the subsidized cost of floor rental mentioned above by means of Demand Draft drawn in favour of MPEDA. Some of the exporters after confirming participation fail to participate for some reason or the other. This has resulted in leaving the stall unattended and putting the MPEDA officials in embarrassing situations. Such situations in international Shows does not auger well and results in wasting government money. To discourage such practices it has been decided that once the exporter has confirmed participation he should participate without fail and those who fail to participate will have to fund the balance 50% of the space rental to MPEDA as MPEDA would have booked the space after paying the full amount to the Organisers.



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# SHARK AND ITS UTILISATION

## GUJARAT PERSPECTIVE

Zynudheen A.A. Arnab Sen, George Ninan, Solanki K.K.\*

**S**hark landings in Gujarat constitute about 3% of the total marine fish landings of the state and above 30% of the total shark landings in India. Of the 35 species sharks reported from Indian waters, more than 15 species are found in Gujarat region. They belong to the family Lamnidae (Mackerel sharks and Thresher sharks), Carcharhinidae (Requiem sharks), Sphyrnidae (Hammer headed sharks), Rhinodontidae (Whale

shark), Odontopidae (Sand-tiger sharks), Squalidae (Dog fish sharks), Echinorhinidae (Bramble sharks) etc. Major species of sharks landed in Gujarat is given in Table I.

A variety of Shark species of commercial importance are caught in Gujarat coast using different fishing gears. A range of by products can be developed from shark, in addition to meat, which is used as a conventional source of food.



Shark fin rays

Table I. Major species of sharks landed in Gujarat

Sl. No.	Scientific name	Common name	Local name
1.	<i>Carcharhinus melanopterus</i>	Black fin/ Black tip shark	Mossikhada
2.	<i>Chiloscyllium indicum</i>	Ridge back cat shark	Musia
3.	<i>Galeocerdo cuvieri</i>	Tiger shark	Pattari
4.	<i>Rhincodon typus</i>	Whale shark	Barrel
5.	<i>Scoliodon laticaudus</i>	Sharp nosed shark/ Yellow dog shark	Sandhi
6.	<i>Rhizoprionodon acutus</i>	Grey dog shark	Pissori
7.	<i>Sphyraena zygaena</i>	Hammer headed shark	Kanmoosi/Kaner
8.	<i>Stegostoma fasciatum</i>	Zebra shark	Musia

(Source MFIS-CMFRI)

Present utilisation pattern of shark and shark by-products has to be revamped on a scientific basis.

### Fishery

In Gujarat, shark is landed throughout the year. There is no exclusive gear for shark fishing. They are caught by trawl nets, gill nets and by long lining. During off season, the landings are poor, mainly from traditional gill nets. Majority of the catch is from trawl nets. Gill nets landings constitute about half

of the trawl nets landings (personal communication). Both Jada jal (Bottom set HDPE multi filament gill nets) and Jeena jal (PE mono filament) are used for catching shark. Quantity wise, *Scoliodon*, *Carcharhinus*, *Sphyraenea* etc., dominate the landings in the order mentioned. Recently deep sea sharks and whale sharks are also being caught in significant quantities. Specially designed large hooks each weighing 8-10 kgs (single, double and triple hooks) are used for catching whale sharks.

### Present Utilisation

#### Shark meat

The consumption of shark meat in this state is limited to the coastal community. Shark meat is used either in fresh form or in dried form. Whole shark, iced and packed in tea chests is transported in trucks to major cities especially to Bombay in considerable quantities for fresh consumption. In addition to this fresh frozen shark meat is exported to different countries. Frozen whale shark meat chunks is also exported to Taiwan and Singapore in



Shark teeth

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**Table II. Landings of Sharks in Gujarat (Qty in tons)**

Year	Total fish landed	*Quantity of Shark landed	Percentage of total landings
1991-92	530017	15707	2.96
1992-93	609103	16301	2.68
1993-94	619836	17645	2.55
1994-95	645261	15395	2.38
1995-96	598351	19422	3.25
1996-97	660068	15256	2.31
1997-98	702355	21387	3.05
1998-99	551660	14702	2.70
1999-90	670951	16588	2.50

\*Does not include whale shark

(Source: Gujarat state fisheries statistics)

considerable quantities. Export of shark meat from India is given in Table III.

**Table III. Export of shark meat from India**

Q: Quantity in kgs.

V: Value in Rs.

1994	Q	124935
	V	3127659
1995	Q	583714
	V	18269396
1996	Q	141567
	V	4907488
1997	Q	120057
	V	4865065

(Source: Statistics of Marine Products Exports, MPEDA)

The major problem associated with processing of shark meat is the high level of urea. Methods have already been worked out by CIFT to eliminate the urea during processing. Another important use of shark meat is in dried form. Dried whale shark meat is also used for consumption. Dried shark is having very good market in North eastern states and southern states like Kerala and Tamilnadu. Considerable quantity is being transported from Gujarat to these places in trucks. Good quality dried shark meat is exported to Singapore and Sri Lanka.



Shark cartilage

### Shark fin

Shark fins are the most important by product obtained from shark. Fins of all sharks except nurse shark can be used for extraction of fin rays. Upper lobe of caudal fin is also not used for extraction of rays. Before any processing, the fins are cut and removed for separate drying. Salt is applied in the ratio of 1:10 and dried to moisture level below 10%. In Gujarat, very few exporters are there who do direct exporting. Shark fins are collected from small scale processors, curers and fish cutting women from the market and pooled together, washed well and dried under the sun for 2-3 days. The dried fins are trimmed off excess meat, if present and

packed in gunny bags (60 kg) and transported to either Madras to Bombay from where they are exported. Whale shark fins are also exported in large quantities from Gujarat in the same manner. Export of shark fins from India is given in Table IV.

**Table IV. Export of dried shark fins from India**

Year	Quantity (in kg)	Value (in Rs.)
1993	139027	58986423
1994	184674	70678296
1995	302509	83833502
1996	240820	104511992
1997	219171	95376387

(Source: Statistics of Marine Products Exports - 1997, MPEDA)

It has been observed that, semi processed fins, i.e., fins after removing the skin and drying is having good appearance and can fetch a better market price compared to whole fins. This will reduce the packaging and transporting cost also. In India restaurants in the major cities are using fins for the preparation of soups. Methods have already been standardised by CIFT to extract the shark fin rays. This is a sample procedure and if carried out carefully and packed in air tight containers the same can be exported.

### Shark liver oil

Shark liver oil is another important by product of shark. In Gujarat, there is no organised set up for the extraction of liver oil. Fishermen or fish processors - mainly curers are extracting the liver in the traditional manner. Normally the oil is extracted by heating the liver in a vessel and oil is separated from the top. If the quantity available is less, it is kept in the vat with salt. It is packed in 20 litre containers and sold to the fishermen @ Rs. 20/litre. Oil is sold through retail shops also. Shark liver oil is also used as a preservative for



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wooden fishing vessels.

Due to the unscientific methods followed for the extraction of oil, the quantity of oil produced is poor. The crude extraction renders the oil black in colour and with a bad smell. The solid waste left after extraction is used as manure.

#### Shark cartilage

Shark cartilage is having pharmaceutical value and is exported from Gujarat. Even though demand is there for the cartilages of all types sharks, presently only whale shark cartilage is exported. It is exported to Taiwan and Korea in 20 kg cartons. In 1997 India exported 1000 kg of shark bone worth Rs. 291103.

#### Shark skin

Even though shark skin will give good quality leather, presently it is not being used. But whale shark skin is having very good export demand. From Gujarat whale shark skin is exported to far East Asian countries and as per the requirement of the buyer it is packed either as fresh frozen or as cooked frozen form in 20 kg bulk.

Shark is an important fishery in Gujarat and constitute about 3% of the total fish landed. Almost all parts of the shark are useful. The present methods of utilisation of this resource mainly depend on crude technologies which will not yield full value realisation. Technologies developed by CIFT are

available, which if used by the processors can give high earnings from this resource. Emphasis should be given for extraction of good quality leather from shark skin which is presently not utilised. Technology is also available for the extraction of shark teeth which can be used for the manufacture of ornamental items. Analogue products from shark meat can be made which has high export potential. The important by-product, shark fins should be fully processed to yield good quality rays which will manifold the earnings from this resource.

\* Research Centre of CIFT, Matsya Bhavan, Bhidia, Veraval, Gujarat - 362 269.

## New shrimp purchase scheme mooted in AP

**S**eafood exporters in Andhra Pradesh have proposed a new scheme for purchase of black tiger shrimps from aquaculture farmers so as to water down the role of middlemen. The scheme is also expected to improve the quality of products so that they get a better price realisation from the global market - a benefit that could be ploughed back to the farmers.

With shrimp exports from the State touching almost the Rs. 2,000 crore mark and the shrimp farming sector growing at a frenetic pace of 20 per cent per annum in terms of acreage, the whole gamut of operations was getting unwieldy.

Such an expansion brought with it certain operational difficulties, resulting in growing domination of middle men, unfair trade practices, improper storage and ice distribution and increased cost of operation. All this resulted in a fall in the

quality of the export products and, with it, poor price realisation.

In order to systemise the operation, the new purchase scheme had been proposed. Under the scheme, middlemen or agents will not operate independently and, instead, the farmer will be given the freedom to directly deliver the harvest to designated purchasing centres. However, if the mediator has financed the farmer, the former can also be present during the purchase.

This would avoid multiple weighment and ensure single weighment. Now what is happening is that the middlemen buys the shrimps at the ponds itself after weighment, gets it to his shed, weighs it again and then delivers it to the exporters' shed, where it is once again weighed. Because of this multiple-weighment, the quality is affected and they are not being able to get the price the products deserve in the international market.

Under the new scheme, some 250 to 350 procurement centres will be designated by the 60-odd exporters operating in the State. The farmer can get his harvest directly to any of these centres and, in the presence of the agents, can sell it to the exporters, thus ensuring only single weighment practice.

The new scheme is envisaging a new concept of head-on counts that would correspond to head-less counts that were actually exported. "Till now the practice is to buy the raw material (shrimps) as head-on shrimps in counts per kilo. However the actual export is as headless counts per pound. For example, 30 count per kilo head on, when processed, will give a mixture of headless count of 16/20 and 21/25. Thus, the new system would make it easier for the exporter, farmer and the agent to calculate and check the right price payable for the raw material based on the export price.

# Russia issues fresh guidelines for the import of Surimi and Crabsticks

*The Ministry of Agriculture of the Russian Federation has made a fresh notification with regard to the import of surimi and Crabstick from India to Russian Federation.*

Alive, cooled and frozen fish, seafood and products from them, that have passed thermal processing, produced on factories that have the permission of the central state veterinary service of the country - exporter to deliver export production and are under its all-time control are allowed for import production and are under its all-time control are allowed for import to the Russian Federation.

Fish and seafood are produced on enterprises, (including mother ships) located in administrative territories free from the African plague of pigs-during last 3 years and foot-and-mouth disease - during last 12 months.

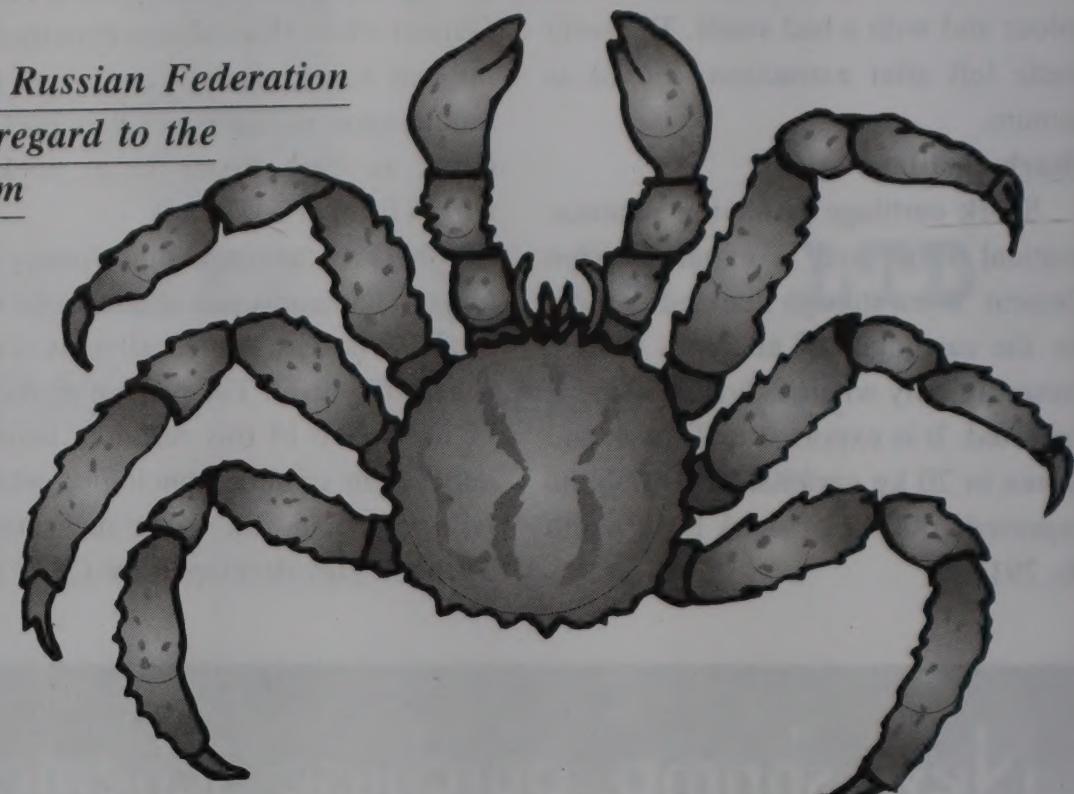
Food sea and fresh-water fish as well as seafood should be tested by the state veterinary service of the country - exporter for the presence of helminthes, bacterial and virus infections by the methods used in the country - exporter.

In case of helminthes presence within the tolerance limits fish should be decontaminated by the existing methods.

Fish and seafoods did not receive forage containing stuff produced with the use of methods of genic engineering or other genetically modified sources.

## Frizzed fish and seafood:

- ★ in thickness of a product having temperature above minus 18 degrees;
- ★ seminated with salmonclae or



pathogenic organisms of other bacterial infection;

- ★ treated with dye-stuffs, ionizing radiation or ultra-violet rays;
- ★ with changes, characteristic to infectious diseases;
- ★ with off grade organoleptic parameters;
- ★ defrozen during storage period;
- ★ treated with dye-or fragrant stuffs, ionizing radiation or ultra-violet rays are not allowed for the import to the Russian Federation.

In the course of veterinary-sanitary examination sea and fresh-water fish, seafood and products from them should be declared good for human food, and should not contain natural or synthetic estrogenic, hormone substances, thyrostatic chemicals, antibiotics pesticides, and other medicament means.

Microbiological, chemicotoxic and radiological parameters of fish and seafood should correspond to veterinary and sanitary rules and requirements of the Russian Federation.

The container and packing material

should be semiexpendable and correspond to sanitary requirements.

Hauling units should be treated and prepared in accordance with the rules adopted in the country-exporter.

Performance of the conditions specified in these requirements, should be completely confirmed by the veterinary certificate signed by the state veterinarian of the country - exporter and written in the language of the country - exporter and Russian.

Shipment of production that has not passed thermal processing to the Russian Federation is possible only after the importer has received the authorization of Department of veterinary science of Ministry of Agriculture and Food Production of Russia.

The department of veterinary science of Ministry of Agriculture and Food Production of Russia has the right to realize certification of mother ships and fish processing plants for the opportunity of their products delivery to the Russian Federation.



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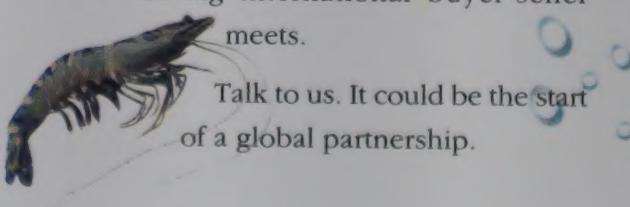
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